

ABSTRACT OF THE INVENTION

**A SPACE-TIME CODING SCHEME AND CHANNEL ESTIMATION, ARRANGEMENT
AND METHOD**

- 5 The evolution of high rate data services within future wireless networks will call for new RF access technologies to enable substantial increases in overall system spectral efficiency at an acceptably low cost to the user. Space-Time Coding (STC) is an antenna array processing technology currently stimulating considerable interest across the wireless industry. The invention provides a space-time coding apparatus having an input, a trellis
- 10 encoder, a modulator, a de-multiplexer, and a set of signal outputs wherein the input is operable to receive a stream of data. This allows de-multiplexing to take place after coding and modulation has been performed. The trellis encoder comprises a convolutional encoder operable to sequentially group data to provide coded bits to provide QPSK symbols. By the selection of convolutional encoder rates and/or modulation alphabets STCs of any desired
- 15 dimensionality may be produced including multi-dimensional codes.

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